**An Enzyme-Linked Immunosorbent Assay for Determining Dioxins in Sediment and Soil Samples**

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The dioxins comprise a family of compounds chemically referred to as polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs). The most toxic of these compounds is 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), a known human carcinogen. Dioxins are formed mainly as by-products of industrial processes (e.g., waste incineration) and can also be produced from natural processes (e.g., volcanic eruption or forest fire). Exposure to dioxins has been linked to various adverse health effects such as severe skin disease (chloracne), birth defects, and an increased risk of cancer. Non-occupational routes of exposure to dioxins include inhalation of contaminated air, ingestion of contaminated food and non-food items, and dermal contact. Conventional analytical methods for determining dioxins rely on sophisticated instrumentation, such as gas chromatographs and high resolution mass spectrometers. These methods are typically time consuming and costly, severely limiting the number of samples that can be processed. Low-cost field screening methods and efficient high-capacity laboratory methods are needed to support large-scale environmental monitoring and human exposure assessment studies. Immunoassays, such as the enzyme-linked immunosorbent assay (ELISA), use antibodies to analyze samples rapidly and cost effectively. An ELISA was developed at the University of California, Davis for the detection of various dioxins. More than 80 sediment and soil samples from a U.S. Environmental Protection Agency (U.S. EPA) Superfund site were analyzed by the ELISA and compared with an instrumental method. The findings suggest that the ELISA method can be used as a quantitative monitoring tool for determining dioxin levels in monitoring studies and to determine dioxin toxic equivalent values in environmental samples.

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